JOURNAL of GEOGRAPHY

for Teachers of
ELEMENTARY,
HIGH SCHOOL
and COLLEGE
GEOGRAPHY

Volume LV
October 1956
Number 7

PUBLISHED BY
A. J. NYSTROM & CO.,
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PRINTED IN THE U.S.A.

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The JOURNAL is the official organ of the National Council of Geography Teachers and is sent to all members. The annual dues, $4.00, are payable to the JOURNAL OF GEOGRAPHY. Extra postage rates for copies sent to foreign countries should be added to the membership dues. Make all remittances payable to the JOURNAL OF GEOGRAPHY, in postal or express money orders or bank drafts.

Send manuscript and books for notice or review to the Editor.
Send orders for back numbers to JOURNAL OF GEOGRAPHY.

Published monthly except June, July and August

PUBLICATION OFFICES: 450-454 AHNAIP STREET, MENASHA, WISCONSIN

Business Correspondence, Membership Dues, and Subscriptions may be sent to Publication office or to

A. J. NYSTROM AND COMPANY
PUBLISHERS, JOURNAL OF GEOGRAPHY
3333 ELSTON AVENUE, CHICAGO 18

Entered as second-class matter January 15, 1919 at the post office of Menasha, Wisconsin under the Act of March 3, 1879.

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VOLUME LV OCTOBER 1956 NUMBER 7

UTILIZATION OF THE COMPARATIVE METHOD IN THE ANALYSIS OF GEOGRAPHICAL REGIONS

GEORGE LANGDON
State Teachers College, West Chester, Pennsylvania

The study of regions is fundamental to modern geography. No matter what the approach, it is generally agreed that geography is always concerned with the characteristics of places and with the obvious likenesses and differences existing among the places on the surface of the earth. There is no doubt that the face of the earth is complex and continually changing as a result of various processes proceeding at different rates and with varying intensities. "The interaction of these diverse processes gives character to the face of the earth and produces contrasts and similarities of its differentiated parts."[1] Geography has been described as "the field that deals with the association of phenomena that give character to particular places, and with the likenesses and differences among places."[2] Areas on the earth's surface that are more or less homogeneous with respect to this or that phenomenon are identified as regions. Geographically, the term region implies: "1) an area of any size; 2) an area homogeneous in terms of specific criteria; and 3) distinguished from bordering areas by a particular kind of association of areally related features and therefore possessing some kind of internal cohesion."[3] In a sense, then, geography itself might possibly be visualized as a comparative study of regions. This article is intended to illustrate how comparison can be employed in order to develop an interesting method of studying the characteristics of two or more regions.

The objective here is to compare two mining regions with the idea of revealing many of the geographical characteristics of each

[1] Preston E. James and Clarence F. Jones, *et al., American Geography-Inventory and Prospect.* Syracuse University Press, 1954, p. 5.
[2] Ibid., p. 6.
[3] Ibid., p. 9.

and to imply how other comparisons could be developed. The two sample regions used to illustrate some of the principles of the comparative method are the Mesabi Iron Ore District of Minnesota and the Northern Anthracite Field of Pennsylvania. These two regions, altho obviously different, seem to exhibit enough similarities to lend themselves readily to an application of the comparative method of analysis. It is always necessary to carefully select subjects which resemble each other yet obviously differ in order to assure effective comparisons.

Maps can be utilized very effectively in developing the comparative technique in geographical analysis. Many types of maps can be used and compared such as those portraying topography, land-use or population density. If used, however, it is always imperative that two maps be made, one of each region illustrating the same thing. The two maps to be compared should be placed side by side if possible, either on the same page or on facing pages. Altho the comparison will be most effective if the two maps are on the same scale, there are times when such an arrangement is not feasible. Perhaps, for purposes of convenience, it is better to make the two maps of the same general size so that they will fit nicely on the same page or on facing pages. In this case, the scales shown on the two maps would be different.

Fig. 1 illustrates the use of comparative maps. In this case, population distribution in the two sample regions is analyzed. Altho there is a striking similarity in the fact that the mining populations of both the Mesabi District and the Northern Anthracite Region reside largely in urban centers, the maps illustrate that there are many sharp contrasts in the way the people are distributed.

In the first place, the Northern Anthracite Region is a narrow crowded valley. "There is not an agricultural landscape interrupted by sporadic evidences of mining, as is sometimes the case in mining regions."[4] Instead, the various types of mining land use mingle closely with a compact urban development. The region has over 500,000 people living in a series of agglomerated settlements. One mining town merges into the next. More than a hundred square miles covered by the basin is decidedly urban. The density of population in parts of the basin is over 3,000 people per square mile. The

[4] Raymond E. Murphy and Marion Murphy, "Anthracite Region of Pennsylvania." *Economic Geography*, Vol. 14 (October, 1938), p. 338.

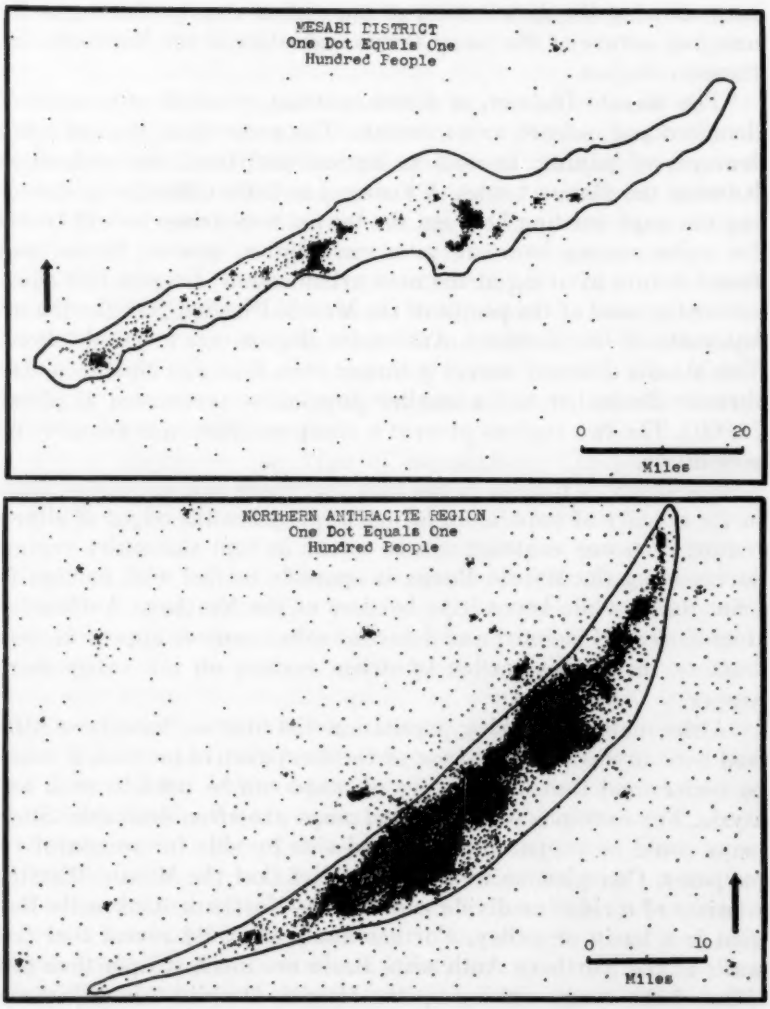

FIG. 1. Utilization of comparative maps to illustrate the characteristics of the distribution of population in the Mesabi District and the Northern Anthracite Region. Note particularly the detached nature of the urban centers in the Mesabi District in contrast to the agglomeration of almost contiguous urban centers in the Northern Anthracite Region.

map showing the distribution of population clearly illustrates the merging nature of the many towns and cities of the Northern Anthracite Region.

The Mesabi District, in direct contrast, consists of a series of detached and isolated urban centers. The great open pits and other features of mining, as well as agricultural land, are wedged in between the Range towns. A visitor has little difficulty in detecting the gaps existing between the towns. Sometimes he will travel for miles among iron ore pits, waste piles, general farms, and forest before arriving at the next urban center. Despite this characteristic, most of the people of the Mesabi District, just like the inhabitants of the Northern Anthracite Region, are urban dwellers. The Mesabi District covers a larger area than the Northern Anthracite Basin but has a smaller population (estimated at about 71,000). The two regions present a sharp contrast in the density of population.

Similarity is noticed in the fact that there is a noticeable drop in the density of population as one approaches the edges of either region. Yet, one contrast can be noted in that the entire region surrounding the Mesabi Range is sparsely settled with no significant towns while beyond the borders of the Northern Anthracite Region several isolated and detached urban centers appear in contrast to the agglomeration of urban centers on the valley floor proper.

Altho maps comparing population distribution have been utilized here to illustrate a phase of the comparative method, it must be understood that many types of maps can be used in such analysis. For example, topographical maps are often desirable. Such maps could be prepared and placed side by side for comparative purposes. Conspicuous would be the fact that the Mesabi District consists of a ridge or divide whereas the Northern Anthracite Region is a basin or valley. Further analysis would reveal that the walls of the Northern Anthracite Basin are much steeper than the sides of the range making up the Mesabi. Despite this difference in gradient, the Mesabi Range is just as conspicuous a ridge as the Northern Anthracite Basin is a decided depression. This similarity comes about largely because the Mesabi Range rises so abruptly and so rapidly above a country that is relatively flat for many miles on either side. Such significant impressions could possibly go unnoticed if the maps appeared singly.

When studying regions by means of the comparative technique, the utilization of many pictures is possible. Carefully compared pictures help to simplify understandings. Both similarities and contrasts can be effectively portrayed thru the use of photographs. In either case, it is always urgent that the views to be compared are taken at approximately the same distance and that they appear on the same page or on facing pages. They should never be isolated one from the other. Another advantage is the possibility of telescoping one picture into another in order to conserve space.

If the objective is to illustrate similarity, it is best to use two pictures, one taken in each region. They should so closely resemble each other that it is difficult to tell in which region the pictures were taken. In this case, the similarity is mentioned in the caption and then the two scenes are distinguished from one another by pointing out minor differences.

Fig. 2 illustrates this type of comparison. The photographs illustrate a familiar sight in both the Mesabi District and the Northern Anthracite Region. The compared views in Fig. 2 illustrate the intimate nature of the intermingling of mining activity and urban development. The scenes are so similar that one would have difficulty in explaining that they were taken in two different regions over a thousand miles apart. The obvious similarity would be pointed out in the caption and the picture would be distinguished from each other. The photograph at the left was taken at Pittston, Pennsylvania while that to the right was taken at Buhl, Minnesota. Color photographs might even be more effective, since the scene at Pittston in the Anthracite Region would have a black cast while that at Buhl in the Mesabi would have a rusty red cast.

Photographs can be just as effectively used in the illustration of contrast. Usually a view of some common feature of one region can be contrasted with a familiar scene in the other. There should be some relationship or similarity in the scenes, but this is not emphasized. Fig. 3 illustrates this technique.

In Fig. 3, a familiar school of wooden frame construction (left) in the Northern Anthracite Region is contrasted with the typical elaborate school found in the towns of the Mesabi District (right). In the view taken at Larksville, Pennsylvania (left) one can notice the obvious lack of landscaping around the building and the volcano-like stockpile of coal virtually in the backyard of the school. It illustrates that the residents of the Northern Anthracite Region

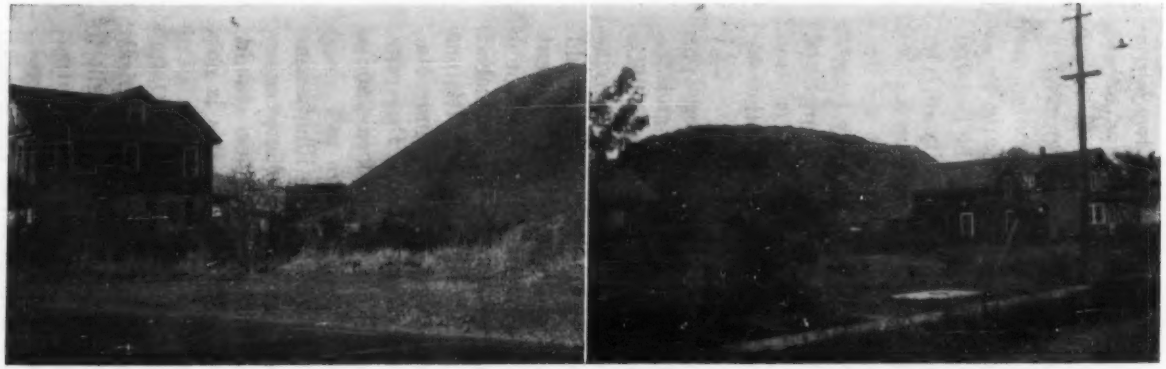

FIG. 2. Using photographs to illustrate similarity. The pictures resemble each other so closely that it is difficult to detect the fact that they were taken in two widely separated regions.

FIG. 3. Using photographs to illustrate contrast. The pictures resemble each other since they are both schools, but this is not emphasized. The contrast in the type of school construction is obvious.

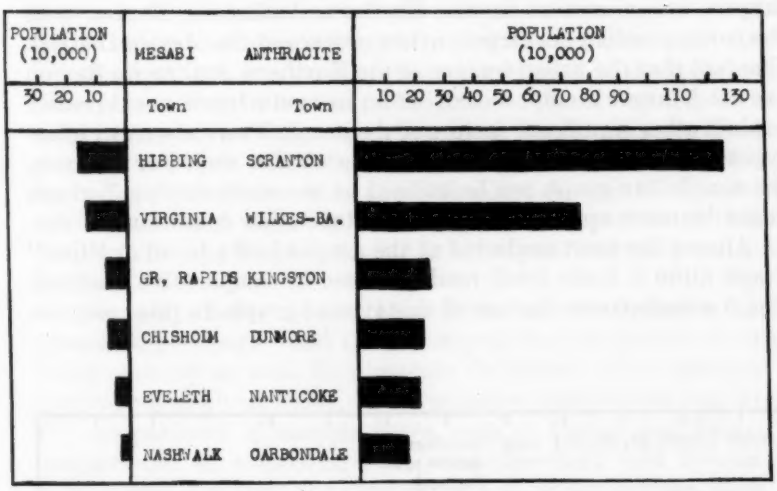

FIG. 4. The flag-graph lends itself readily to use in the comparative technique of analysis. In this case, the populations of the six largest urban centers of the Mesabi District are set off against the six largest urban centers of the Northern Anthracite Region.

"can seldom forget that coal is their mainstay."[5] In general, the schools of the Mesabi District give a much more favorable impression. There one finds large, expensive schools in small towns. In the view of the fine high school at Hibbing, Minnesota (right) one can readily see the sharp contrast. Hibbing High School cost over $4,000,000 when constructed, is well landscaped and has an ornate interior. Even the very small towns of the Mesabi District usually have impressive schools. For example, Buhl, Minnesota (population 1,462) has a school that cost $1,700,000 when constructed. It is only natural that such a sharp contrast can easily lead to a discussion of differences in taxation policy, governmental administration, and the like. A pleasant departure from the use of photographs is afforded by the use of diagrams and sketches.

Numerous types of graphs lend themselves readily to use in the comparative technique of analysis. They should always be clearly and boldly drawn and are best utilized when they are placed together on the same page or at least on adjoining pages.

The double flag graph utilized in Fig. 4 is one of the most common devices of this type. It compares the population of the six

[5] Raymond E. Murphy and Marion Murphy, *Pennsylvania—A Regional Geography*. Pennsylvania Book Service, Harrisburg, Pennsylvania, 1937, p. 339.

largest urban centers in the Northern Anthracite Region with the corresponding six largest urban centers of the Mesabi District. The fact that the urban centers of the Northern Anthracite Region are much larger is emphasized, but an energetic teacher could easily explain other significant factors of the graph. There are many other types of graphs that could be used in a similar way. For example, the simple bar graph can be utilized or the circle or "pie" graph might be more appropriate under certain other conditions.

Among the most neglected of the graphs is the trend or "line" graph altho it lends itself readily to use in comparative analysis. Fig. 5 demonstrates the use of this type of graph. In this case, two

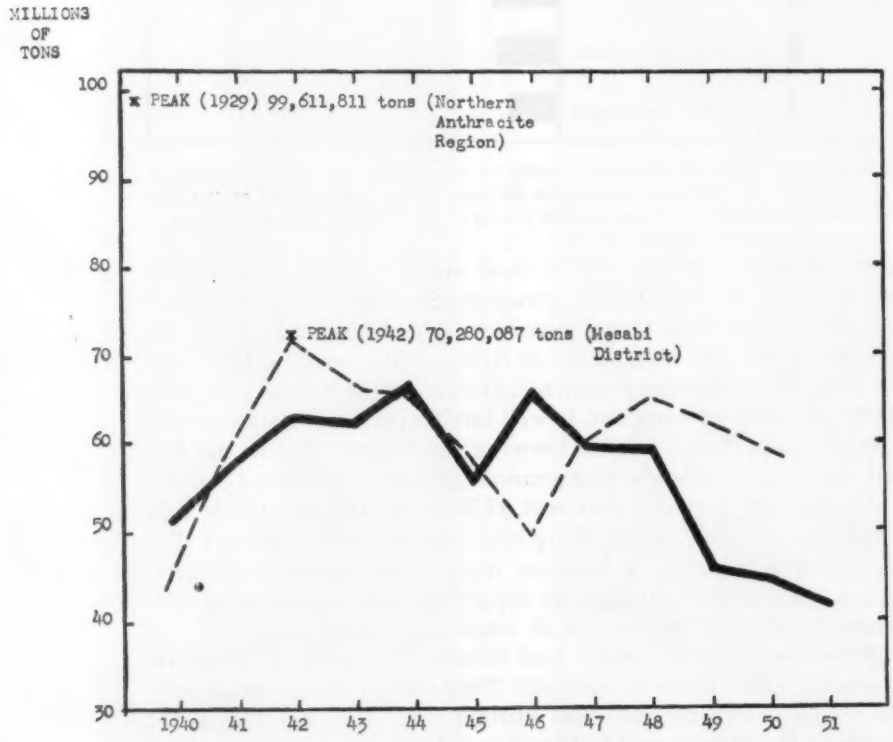

Fig. 5. The trend or "line" graph is a valuable tool in the comparative method of analysis altho it is often neglected. This graph uses two lines to compare trends in coal and iron ore production in the two sample regions. The solid black line represents the Northern Anthracite Region while the dashed line represents the Mesabi District. The peaks of production for both regions are indicated by x's.

lines are used, a solid line to indicate trends in coal production in the Northern Anthracite Region and a dashed line to illustrate the trend in iron ore production in the Mesabi District. In some situations, it may be necessary to use more than two lines, but one must be careful not to get too many lines. There is always the danger that the lines will intersect so often that the graph becomes confusing and loses its value as a tool. Altho statistical information can be portrayed skillfully on various types of graphs, at times a simple table may be used to clarify significant contrasts and similarities.

The comparative method of analysis may be applied to many phases of geography and the techniques may be applied to other fields of study as well. To illustrate the variety of possibilities in geographic analysis alone, let us consider some of the following: (1) comparisons of various ports, such as Duluth and Erie; (2) comparisons of countries, such as Switzerland and Bolivia or Alaska and Finland; (3) comparisons of urban centers, such as Los Angeles and Philadelphia; (4) comparisons of geographical regions, such as the Amazon and Congo Basins; (5) comparisons of islands, like Java and Cuba or Fiji and Hawaii. In any case, if the comparative study is to be effective, it is necessary to carefully select subjects which resemble each other, yet obviously differ.

Geographers, as well as teachers in various other fields, have often been taken to task because they failed to teach effectively and in an interesting manner. This paper is merely intended to give ideas and to point out that the comparative method offers a variety of possibilities. There is little doubt that geographers need to develop interesting techniques of presenting information. "Not enough of their investigations have focused on the comparative."[6]

[6] Eugene VanCleef, "Must Geographers Apologize?" *Annals of the Association of American Geographers*, Vol. XLV (March, 1955), p. 105.

QUINOA, A POTENTIALLY IMPORTANT FOOD CROP OF THE ANDES

ELIZABETH EISELEN
Wellesley College

Quinoa (pronounced keé no à) has been a staple in the diet of many Indians in the high Andes of Peru and Bolivia, and to a less extent of Ecuador and northern Chile, at least since the days of the Incas and probably earlier. It is a more nutritious food than most of its competitors. Its yield at high elevations is normally greater than that of any grain. Yet today quinoa is grown mainly in small patches, and the total acreage is less than before the Spanish introduced barley to the Indians. Most geography texts, if they mention quinoa at all, devote but a sentence or two to this "pseudo-cereal."

THE PLANT

Quinoa is the seed of *Chenopodium quinoa,* a three to five foot tall annual herb of the goosefoot family. There are numerous varieties, but cultivation is limited to a few of the most productive. A ripening field may display a variety of colors with green, white, ivory, yellow, red, or black clusters of small round seeds at the tip of the plant.[1] Altho botanically not a grain, the seeds are utilized as if they were a cereal crop. In addition the leaves may be eaten as a green vegetable.

The plant is indigenous to the tropical Andes where it still grows wild. It is believed to have been domesticated near Lake Titicaca long before the Sixteenth Century coming of the Spanish. Only the potato exceeded quinoa in importance to the Incas, who are said to have considered it a sacred plant and to have used an implement of gold to make the first furrow each year.

ENVIRONMENT AND CULTIVATION

Quinoa thrives at altitudes of approximately 9,000 to 13,000 feet above sea level where most crops have difficulty maturing. As is the case with many tropical plants, quinoa requires a short day to produce seed. In spite of numerous attempts, it has never been successfully introduced elsewhere.[2] When it has been tried at high elevations in the United States, the plant has flourished during the

[1] A duplicate 2″ × 2″ kodachrome slide of a ripening quinoa field photographed near Cuzco, Peru, in May, 1955, may be purchased from the author for 40¢.

[2] R. W. Schery, *Plants for Man.* Prentice-Hall, New York, 1952, p. 400.

long summer days, reaching heights of seven feet, but the seed does not mature before the plants are killed by winter cold.[3]

The planting season for quinoa extends from September to November, and, depending on the variety, it will mature in five to seven months. It is seldom planted as the sole crop, usually being associated with corn or barley. The seed may be broadcast, or it may be planted in rows two or three feet apart. It is then roughly covered with soil by dragging thorny branches over the field or by rude harrowing. Germination takes place in eight to ten days, altho in loose-textured soil it may be even more rapid. The field is thinned, weeded, and the individual plants hilled by hand. When the crop is mature, the plant is cut and left to dry in the sun for several days. Threshing is by primitive methods. The heads of seed are flailed with a stick, and the chaff is separated by winnowing.

Quinoa will grow in a wide variety of mountain soils and weather conditions. It is tolerant of light frost, poor soil, drought, and little care. Common methods of handling the crop result in yields of approximately 450 to 900 pounds of seed per acre. On the other hand, scientific cultivation increases the yield to over a ton per acre.[4] Wise methods of growth include selected seed, sowing in rows, good cultivation, and irrigation if necessary. The soil should be rich in calcium, potash, and manganese or improved by fertilization.

The plant is subject to few diseases, but insect damage occasionally becomes a problem. The greatest losses come from small birds which eat the seed before it is ready for harvest.[5]

Nutritional Value

The value of quinoa lies not only in its adaptability to high altitudes but also in its nutritive value. As Table I shows, quinoa leads rice, corn, and wheat in calories, proteins, and fat content. It also is an important source among the foods listed of minerals and some vitamins.

The nutritive value of quinoa is corroborated by other studies such as those quoted in Tables II and III. Since colonial days barley has exceeded quinoa in acreage at high elevations. However, Tables

[3] Letter from C. O. Erlanson, Head of Plant Introduction Section, Agricultural Research Service, United States Department of Agriculture.

[4] C. F. Martinez Claure, *La Quinua*, 2nd ed. Ministerio de Agricultura, Republica del Peru, Lima, October, 1946, p. 8.

[5] H. W. Alberts, "Quinoa—Ancient Food Crop in South America." *Agriculture in the Americas*, Vol. VII (December, 1947), p. 152.

TABLE I
COMPARATIVE NUTRITIONAL VALUES OF SELECTED CEREALS PER 100 GRAMS OF WEIGHT*

	Quinoa	*Wheat*	*Yellow Corn*	*White Rice*
Calories	353	328	335	253
Protein, gr.	10.7	9.2	8.4	5.9
Fat, gr.	5.7	1.5	0.3	——
Carbohydrate, gr.	69.2	71.6	72.9	56.5
Calcium, mgr.	141.0	36.0	6.0	8.0
Phosphorus, mgr.	449.0	224.0	267.0	143.0
Iron, mgr.	6.6	4.6	3.7	——
Thiamine, mgr.	.32	.30	.30	.11
Riboflavin, mgr.	.20	.08	.16	.08
Niacin, mgr.	1.60	2.85	3.25	3.30

* From table insert in *Recetas a Base de Quinua*, 2nd ed. Ministerio de Agricultura, Servicio Cooperativo Inter Americano de Producción de Alimentos, October, 1953.

II and III show that, except in carbohydrates, quinoa exceeds barley in food value.

METHODS OF UTILIZATION

Quinoa is utilized in a variety of ways. The seed serves as human food and as feed for poultry and livestock, or it may be used in the brewing of a type of beer. The tender stems and leaves may be

TABLE II
ANALYSIS OF SELECTED CEREALS*

	Quinoa	*Wheat*	*Corn*	*Rice*	*Oats*	*Rye*	*Barley*
Nitrogenous matter	16.5%	11.0%	9.5%	6.5%	10.5%	8.0%	10.0%
Fat	4.4	1.55	4.7	0.5	4.0	1.18	1.5
Carbohydrate	51.0	71.0	70.0	78.0	60.0	72.5	70.5
Mineral matter	3.365	1.8	1.27	0.49	3.5	1.5	1.5

* C. F. Martinez Claure, *La Quinua*, p. 10.

TABLE III
COMPARATIVE STDUY OF QUINOA AND BARLEY PER 100 GRAMS OF WEIGHT*

	Quinoa	*Barley*
Moisture	13.30	13.7
Ash	3.20	2.4
Protein	13.85	10.4
Fat	4.77	1.2
Carbohydrate	55.86	68.9
Cellulose	2.90	3.4

* C. F. Martinez Claure, *La Quinua*, p. 10.

served as salad greens or as a cooked vegetable similar to spinach. Quinoa ash is sometimes chewed with coca leaves. Dried stalks are used as fuel.

As food for people, quinoa may be eaten raw or, more commonly, boiled, toasted, in soup, as a cereal, or ground into flour. It may even be popped in the same manner as popcorn. Quinoa flour may be mixed with wheat flour in the preparation of bread or biscuits. During a period of wheat shortage early in World War II, the Peruvian Government tried unsuccessfully to require millers to produce flour with a content of 80 per cent wheat, 15 per cent rye, and 5 per cent quinoa.[6] When the author was in Bolivia early in 1955 all bread baked for sale was required by law to contain some quinoa flour. The result was similar to oatmeal bread.

Because of quinoa's nutritive value and variety of uses, serious effort is being made by both Peruvian and Bolivian ministries of agriculture to increase its production and use. Bulletins and articles citing its value have been published in both countries. One of the more useful pamphlets is *Recetas a Base de Quinua* which contains thirty recipes utilizing quinoa as a basic ingredient. They were selected by the Departamento de Economia Domestica of the Servicio Cooperativo Inter Americano de Producción de Alimentos (SCIPA). The recipes range from soup, to entree, to dessert. There are cooked dishes such as quinoa with shrimp, quinoa with cheese, or tamales, soufflés, and croquettes. The desserts include quinoa-lemon meringue pie. There is also an easy method for preparing quinoa for breakfast; or if one desires, there are directions for making the alcoholic beverage "Chicha de Quinua."

The Future

Whether or not production and consumpton of quinoa will be increased remains to be seen. In 1948 a Nutritional Conference sponsored by the Food and Agriculture Organization of the United Nations asked FAO to establish a scientific mission to study the value and potential uses of quinoa. With increasing scientific interest in this ancient food, quinoa may recover the importance it had under the Incas. It will then be able to "play a major role in feeding the Upland Indians, whose nutrition problems are among the most serious in the Americas."[7]

[6] Alberts, *op. cit.*

[7] "Nutritional Needs of Latin America; Ancient Plant May Solve Dietary Problems." *United Nations Bulletin* (August 15, 1948), p. 67.

SPATIAL FEELING IN GEOGRAPHY TEACHING

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The term spatial feeling is not satisfactory but so far a better one has not been found. It appears to be a translation of German *Raumgefühl* but is not to be understood in the pragmatic sense which *Raumgefühl* acquired in connection with *Lebensraum* when Karl Haushofer, among others, dealt with it. The good Anglo-Saxon word "room" seems to be used mostly in connection with a defined or restricted space, illustrated by examples of interior decorators' lingo like "roomy feeling," an arrangement that "gives one a lot of room," or "feeling, atmosphere, proportion of room." In North America we speak of the wide open spaces and—whatever their definition—they evoke a certain feeling which somehow is not easily produced in the Low Countries or Japan, for instance, while we might expect Russian peasants to understand it.

Is this spatial feeling merely a question of a large national space defined by boundaries; is it something effected by population densities—properly explained of course, and not taken at face value; is it geographically conditioned; is it significant for teaching about other peoples and their relationship to their environment? The need to consider the geographical background of those who are being taught when we talk of earth features was expressed with concrete simplicity by Preston James: "We cannot expect third graders in Kansas to appreciate the meaning of ocean, or Florida children to understand the meaning of mountains."[1] The next step is the realization that a hill or slope in Wyoming may be a mountain to an Iowa boy; that people see and give names to relative heights; that sizes of lakes, fields, rivers and woods are not only measured by certain units, but that the same quantitative distance and area appears differently to different people. Before we talk about time and space distances, defense in depth and population pressures, it might be desirable to lay a basis, and lay it early, for the understanding of geographical conditioning of such concepts as distance, space and crowdedness. The following remarks grew out of classroom discussions which reflected the students' desire to understand how people think and feel about their population-land ratio and boundaries.

Distance

Why can Tommy ride his bike to school while Dick does not have permission to use his, and Harry comes by bus? How many blocks do we think—and we make our rules accordingly—a child at a certain age can or should walk to school? What do adults mean when they reply to a passer-by who has asked for street directions that "one can't walk that distance"? Stories by uncles and grandparents who walked two or three miles to school are still with many youngsters. How much and thru what circumstances did we change our estimation of the distance which is prohibitive of legwork to an adult in the United States in 1956? By what words do we indicate distance? We walk so many blocks in the cities, we might use the word blocks when we drive very slowly, perhaps while we look for a housenumber, but usually we measure driving distances by miles. Most of our directions are given with reference to roads, few with reference to natural features or to astronomical directions. It seems that students on field trips, whether they drive themselves or are passengers, need no longer look at the speedometer to give a fair estimate of the distance they have come, an estimate that is probably based on unconscious response to the feeling of motor and road. However, they have difficulty to judge a distance—short or long—when standing in the open country with or without landscape features, and when they are hiking.

People are likely to judge what is far or near by the time and the difficulties it takes them to get to the destination. What is far and what is near to a boy on a western ranch, accustomed to getting places by car, bus or, may be, on horseback, and for a boy in Manhattan who goes "downtown" and "uptown" by walking blocks, taking the subway or climbing on a bus that stops at almost every block? An Indian boy accompanying his parents to a market in Peru, a postman cycling a narrow country road in Holland, a commuter on a suburban train to New York, a pilot with Pan-American Airlines have daily experiences with time distances that are different. Such daily experiences differ not only with regions, but with the socio-economic condition of individuals and groups in the same region. The overseer of a Peruvian mine, the captain on a Dutch boat, the delicatessen store owner in Brooklyn, the truckdriver who delivers laundry and set-up lunches to the plane are conditioned differently. The feelings that distances evoke in people are related to their experiences.

America has been called "an experiment in transportation"[2] and long distances are not very awe inspiring to a large number of our people. In Great Britain, where history, literature and many family backgrounds unrolled almost the whole world before the imagination of youth for generations, long distances, particularly across the sea, have nothing formidable either. To young people in Germany where technical, economic and educational developments also opened the world for the imagination, but political events, at least periodically, did not, provincialism may be the outlook of some, "wanderlust" the urge in others. The desire to "take a really long trip" to go "far away"—no matter where—and the lack of opportunity for extended journeys were a real source of dissatisfaction among German youth between 1919 and 1939. Now, in 1955, the longest train distance in Germany is less than 900 kilometers (552 miles)—a distance that a number of Americans think of as a day's drive. Americans can drive five hundred miles in many directions and still go much further in their own country; the German with his trusty Volkswagen is likely to have crossed a boundary before he has driven five hundred miles. When young Russians are recruited in Kiev to go to work on the virgin lands of eastern Kazakhstan, when thru-trains run between Moscow and Peiping and peoples from the far corners of Russia are brought to Moscow for the agricultural fair, long distances are going to enter the people's consciousness as possible, not formidable experiences. One important change among many in Red China is the better comprehension that many people will get of the size of their country when they have other transportation facilities than the human carrier. Thru probing a little into peoples' manyfold experiences with overcoming distance we can also appreciate one aspect of the jump of two thousand years in two generations that African natives are asked to make whose fathers did not even know the wheel. Maps in textbooks showing the "Rate of Travel" at a certain period in isolines also will be less abstract but gain in meaning.[3]

SPACE

Space is area which is measured by multiplying width and length. Revealing are the units which people use in their measurements. How do we tell about the size of our room at home or in school? By square feet. Log cabins are described in the same way in history books, twelve by fifteen feet, for instance. The size of houses

or apartments is usually given by the number of rooms they have; real estate advertisements are examples. The length and width of town and city lots are given in feet; the space that is surrounded by streets is called a long or short, a large or small block. Country estates have acres, so does the American farmer. But cattlemen in the west may use sections to measure the size of their holdings. In early history, any field, regardless of size, was called an acre; it was the amount of land a peasant worked to make a living. Later, on the acre was standardized to contain 43,560 square feet or roundly 6,104 square yards. With the Homestead Act of 1862 the quarter section of 160 acres became a sort of standard which people in the midwest had in mind when they talked of a large, small or "regular" farm. Naturally, "large" and "small" farms vary in the United States with region, usage and value of land. But it is noteworthy, that a piece of land, 160 acres in size, could become a standard over a wide area. It is a large piece when compared with commonly used units in other parts of the world. The development of a "feeling" for a quarter section or a section among our youth who are to appreciate American history and geography would be a worth-while educational experience, which entails the willingness or ability to walk one or four miles.

A farmer in Germany measures the size of his land in *morgen.* This means really morning and is said to have originated very early as meaning the space that a man could till with his team of oxen during a whole morning. The size of the *morgen* varies in different regions of German-speaking peoples in Europe. A widely used size is the Prussian *morgen* of 0.255 hectares. Thirty *morgen,* a *hufe,* became the unit of land that represents a respectable farm. This means that the feeling among many German peasants for the space of nineteen to twenty acres corresponds to that for 160 acres among farmers in many parts of the American midwest. The *morgen* is used in the Union of South Africa too where the Boers introduced the traditional measure and in France peasants often prefer to talk of the traditional but variable *arpent* rather than of hectares, the unit of the official metric system. In Japan, the vegetable gardener works his *bu* or *tsubo,* a piece of land six by six feet. Ten *tan*—a *tan* means originally farm and amounts to 0.24506 acres—make up the *cho* of roundly two and a half acres. This is considered the desirable upper limit for a family sized farm after World War II. The smallest unit used inconnection with farming in Japan is most reveal-

ing: it is the *tatami*, the word for the Japanese strawmat of three by six feet. At this point, the teacher's desk is of service to give an idea what the size of a "field" can be in a country where tillable land is at a premium.

It is well known that the mere size of cheaply obtainable land was a lure for land-starved European peasants who emigrated to the United States in the nineteenth century. To know that one country uses the metric and another the Imperial system of measurements is useful, but it is also helpful to recognize the units by which tillers of the soil in many lands measure their patches or fields. We recognize readily that a nomad and an oasis farmer—both of the desert—use very different spaces as the base of their living.

Crowdedness

What is a crowd? Thousands of people going to the stadium, waiting for the parade, milling around Coney Island on a hot summer afternoon are crowds. They might also be called masses. Not a mass, but a crowd are only fifty people who wait at the bus stop and twenty visitors in the sitting room may be a crowd too. When the crowd gets "too big" for a situation people are or feel crowded. What is or is not crowded is subject to argument. The conductor says there is plenty of room if passengers will only step back farther, but some passengers are convinced that they cannot take another step without being rude. Some people like, or say that they like crowds, others do not. Upon return from a fishing trip father may complain that there was too big a crowd and the lake was all fished out. Some people find it hilarious to be part of a big crowd on the beach. Children might think it is great sport to create their own condition of crowdedness in a classroom by trying to move into one corner. They are more likely to enjoy it if crowded classroom conditions are not a daily experience. The little experiment does not mean that there has to be pushing and pressing but it means that pushing and pressing is easily induced. The American vernacular has a good word directly derived from the situation of physically felt crowdedness: elbow room. The variety of spatial conditions to which the concept of elbow room is applied is amazing. Mother wants more elbow room in the kitchen, father wants more elbow room in the backyard, the family wants a cabin by itself to have more elbow room on vacation. In each case another mother, father,

and family, who come from more crowded environments, are likely to find that there was plenty of elbow room in the first place.

The relative character of a condition of crowdedness should be emphasized. By observing the different reactions of familiar people in familiar circumstances first and early we may understand the regionally and historically different conditioning of spatial feeling among groups and nations. This writer experienced a very acute feeling of crowdedness in 1934 when several parties lined up to use the trail for the last climb of a harmless Alpine peak. The situation reflected exchange restrictions and limited vacation space for the travel-minded citizens of the Third Reich. In 1935, the same observer came to America—after living in Berlin and London—and took note that "one could really feel at home in New York." On the first railroad trip from New York to Washington D.C., more precisely between Philadelphia and Wilmington, "America's spaciousness was already apparent." This particular stretch would hardly be considered by Americans to be very representative of the wide open spaces. At a time when the reunification of Germany is an ardent political problem it is well to keep in mind how strongly East Germans now in the West zone feel about the loss of eastern Germany, the provinces as well as the Russian zone. For centuries they participated directly or indirectly in the penetration of the land east of the Elbe River, of spaces that to them were open, wild, underdeveloped, underpopulated.

There are no standard measures of overpopulation. Resources are changeable, living standards quantitatively and qualitatively different; wants are subject to many influences. Even if members of an international tribunal could agree that a national area is overpopulated it still is necessary to recognize that peoples and/or their governments say that their countries are overpopulated when they feel that way. In our own civilization the word pressure, implying a condition of crowdedness is used increasingly with respect to schools, highways and recreation facilities. "Recreational pressure" is becoming a favorite with park board members. While these pressures are linked to economic standards they are also linked to numbers of people per unit of available space. The people of Holland—a country that is conceded to be overpopulated by many observers—are concerned not only with the amount of food that can be produced for the growing population and with markets for manufactured goods but also with their recreational pressure.

In 1900, 165 hectares in woods and wastelands were available in the Netherlands for one thousand inhabitants, in 1950 there were only 56 hectares while France at the same time has 430 hectares of woods and wastelands for one thousand inhabitants.[4] The Netherlanders feel and say that their population density is becoming too great and their government takes a benevolent interest in demographic emigration, i.e., in the settling of people abroad. The Japanese government approached the problem differently and was unsuccessful at conquest and at colonization in subjugated territories; theirs was an economic migration, not a sizable demographic emigration. Now, the Japanese government supports birth control. In Germany during periods of acute distress local governments supported emigration to foreign countries during the nineteenth century. During a period when outside observers were inclined to deny the existence of overpopulation in Germany, many people in the fatherland thought that colonies and conquest of additional land would be a solution for what they were certain was overpopulation. The colonies were entirely unsuited for the absorption of surplus population and conquest failed. Now emigration is conditionally recommended but considered harmful if it means losing skilled manpower, because trust is put in economic reconstruction and export. China embarks on industrialization, flood control and colonization of frontier, often marginal, lands. India admits overpopulation frankly and tries industrialization, education, reclamation and birth control.

These broad strokes must suffice to outline the theme that peoples will notice, admit and do very different things about overpopulation at different stages of crowdedness. No need to start a new field of geo-psychology! Just let us have the vision that more or less measurable quantities such as per capita income, daily calorie consumption per person, availability of kilowatts per thousand inhabitants, population density per square mile and per arable square mile apply in reality to diversified geographic environments which invoke qualitatively different reactions from peoples.

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GEOGRAPHY LEARNINGS IN CAMPING

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The air was filled with excitement in the fourth grade room. Children who normally found it difficult to arrive by 9 o'clock were already in school tho it was only eight o'clock. Both boys and girls were dressed in dungarees and jackets and carried camping supplies. The fourth grade was going on its first one-day camping trip.

Our school is fortunate in having at our disposal the facilities of our College Camp. But a teacher does not need a camp for an experience similar to ours. A state, county or city park will do just as well. Even a wooded area near school or a far corner of the school grassy area could do. In fact one year we used a far corner of our play area for such an experience.

To the children this was their first active participation in the school's camping program. To the teacher it was one way of making the geography experiences of her class more meaningful. The activities to take place that day were planned with that objective in mind.

Planning the Trip

Because children like to take trips very little motivation was necessary. The children and teacher talked over the worthwhileness of going all the way out to the College Camp. Some of the reasons listed were: 1) to become familiar with the camp before we stay overnight when we're in fifth grade; 2) to learn more about plants and animals; 3) to learn how to get ready for camp; 4) to learn what to do at camp; 5) to learn how to use a map at camp; 6) to see if we can find out why the camp was located at this place.

Preparing the Food

It was decided that the children would bring their own hamburger rolls, vegetables, fruit, and dessert. The milk was ordered

from a nearby dairy so it could be iced and kept cool. As a class we figured out how much hamburger would be needed (at ¼ pound per person) and chose two children to make the purchase accompanied by the teacher. They learned how to shape patties and wrap them in aluminum foil so that each pattie could be put into the coals and roasted in the foil.

Learning About Weather and Climate

Our planning periods provided an opportunity to talk about weather and climate. By talking about the climate of our area the children knew that we were in an area where sudden changes in weather could occur. Because the weather is not easily predicted the children decided that they should be prepared both for sunny and rainy weather. So children had to bring extra clothing such as raincoats and rubbers. They also knew that if the weather were too rainy the trip would be postponed until the first clear day.

Reading Maps and Compasses

The class looked at some home-made maps of the camp. Each child used a compass and found how to locate north on the compass. Then the map was moved until N on the map was oriented with N on the compass. The children looked at and interpreted the information on the map such as woods, streams and campsites and studied their locations on the map. Upon arrival at the camp the class also learned how to find direction in relation to the sun. They found how to travel in the correct direction by knowing where they should be in relation to the sun.

Some children also used their compasses enroute to camp to find what direction the bus was taking. (Parents often take groups in cars when it is not possible to secure a bus.) They were interested in hearing that this particular road started as a pioneer route thru the valleys leading from the Erie Lake Plain to the Alleghany Plateau.

Looking and Listening

At camp the children had geography experiences in addition to that of using maps and compasses. Learning to look was one of these. They became more observant of signs of wildlife both of the animals and their footprints. They saw examples of soil erosion and reforestation as one means of holding down the soil.

After examining some seedlings planted by other classes two and three years ago, this class learned how to plant trees and took turns planting them. Natural waterforms such as creeks and man-made ponds were both here for them to study. The group also learned to listen. They could hear silence from man-made noises, the rippling of a brook, and birds calling.

Using Natural Resources

At lunch time they were shown how to build a fire pit. Only one pit was necessary for the group. They cut a rectangle about two feet wide and three feet long. Then they cut across about one foot from the top of the rectangle and lengthwise down the center of the other two feet. The sod was then carefully lifted with the hands and turned back at the edge of the pit so that the grass of the rectangle was facing the grass of the ground. The children collected only dead wood found on the ground. No wood was chopped at any time. The wood was piled by size so that the tiniest twigs were used to start the fire and larger pieces of wood were gradually added. This experience was an enlightening one to the children because many of them had not realized that there often is enough dead wood around to make it unnecessary to destroy any trees for firewood.

When it was time to extinguish the fire, the children brought up water from the brook and wet down the fire until there was no trace of smoke. Then they carefully turned back the earth they had lifted up and stamped it into place. They were quite pleased to note that it would be difficult for anyone to find the location of their fire pit because they had replaced it so carefully. All rubbish was removed so that the area was now as neat as they had found it. After an afternoon of exploring and fishing a very happy, tired group of children headed for home.

Evaluating the Trip

During their evaluation period the next day the children agreed that not only had they learned the things they had listed, they learned many additional things as well. Some of these were: 1) recognized some birds and bird calls; 2) recognized deer prints; 3) learned how to move about camp without getting lost; 4) realized the need for more conservation.

As a result of this camping experience the children are eagerly

awaiting their year in fifth grade where they will have more advanced camping experiences.

The teacher in evaluating the day found that it had been possible to make more meaningful to the children several geographic concepts such as weather, conservation and map reading. Camping experiences can be enriched by a knowledge of geography while geography can be made more meaningful thru camping experiences.

GEOGRAPHY IN CALIFORNIA JUNIOR COLLEGES, 1955-56

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In an attempt to determine the present status of the teaching of geography in California junior colleges, a form with pertinent questions was sent out during the fall of 1955. Of the 59 public junior colleges all but 10 answered and returned this questionnaire. Of those not responding at least five, according to their catalogues, are offering one or more courses in geography during the academic year 1955-56, but since the information contained in the catalogues is insufficient for the present purpose, these 10 are not included in the statistics presented and discussed in this paper.

Previous investigations of the same question by Carthew[1] in the spring of 1948 and by Richason[2] in the fall of 1950 offer an opportunity to perceive changes that have taken place since then. A comparison of certain data from the earlier and the present surveys is made in Table 1. Carthew had information about all public junior colleges in California in operation in 1948, while Richason, who was concerned with junior colleges in the United States, had responses from little more than half of the 59 California institutions active at the time of his inquiry.

Twelve colleges responded to the present inquiry with the statement that they did not offer geography, at least during the fall semester of 1955. A number of them, however, indicated that they are planning or considering the addition of courses in geography

[1] Arthur Carthew, "Geography in California Junior Colleges." *Junior College Journal*, Vol. 19 (January 1949), p. 244.

[2] Benjamin F. Richason, Jr., 'Geography in the Junior Colleges of the United States." *The Journal of Geography*, Vol. 50 (September 1951), p. 246.

TABLE 1

Investigator	Carthew	Richason	Kramer
Date of inquiry	Spring 1948	Fall 1950	Fall 1955
Total number of junior colleges	52	59	59
Number of junior colleges responding	52	34	49
Junior colleges responding, with geography offerings	43	20	37
Number of geography courses in junior colleges	66	46	111
Approximate enrollment in geography courses	3,360	2,245	5,480

to their curricula in the near future. Of the 37 other colleges, seven offer one course each, 15 offer two, and another 15 three or more courses in geography.

Table 2 classifies the courses as to subject matter, and shows, together with student enrollment, how many junior colleges are offering the respective subjects. The comparable figures for the spring semester of 1948 are also given. Carthew combined the data for physical and cultural geography under the heading "principles of geography" and listed the customary sequence of elementary Economic Geography 5A and 5B together. The most widely taught course, both in number of colleges offering it as well as in enrollment, is physical geography.

This is due, undoubtedly, to the fact that this course, like the corresponding lower division course at the University of California, both at Berkeley and at Los Angeles, carries "natural science credit"; and junior college students select it with its transfer

TABLE 2

Courses	Fall, 1955		Carthew, spring 1948	
	Number of junior colleges	Approximate enrollment	Number of junior colleges	Approximate enrollment
Physical Geography	30	2,810	24	1,500
Cultural Geography	19	725		
Economic Geography (5A)	23	795	33	1,570
Economic Geography (5B)	19	450		
Geography of California	4	170	—	—
Regional courses	4	235	1	35
World Geography	4	140	4	90
Map Interpretation	3	85	—	—
Weather & Climate	3	60	3	140
Conservation of Natural Resources	2	50	—	—
Political Geography	—	—	1	20
	111	5,520	66	3,335

credit-value in mind. The next strongest subject is the two-semester course in economic geography. There has been a marked shift in enrollment from this sequence toward physical geography during the past seven years. This shift has also been observed in the University; it may be explained, at least in part, by the fact that Economic Geography is no longer a required course in the University's School of Business Administration. It is curious, nevertheless, to note that not only has Physical Geography surpassed Economic Geography but also that the absolute enrollment in the latter course has declined. Concerning the remainder of the listing in Table 2 it is heartening to note that the breadth of offerings has increased in the period since Carthew's survey.

The question may be raised whether it is a good policy for the junior college to present courses so closely paralleling the University program. That it is of advantage to the transfer student there can be no doubt, but the 40 per cent to 50 per cent[3] of the junior college student body that does not continue its education at the University should not be forgotten. These "terminal" students presumably avoid the first four courses listed in Table 2. Even those who are not geographers would agree that these students should receive instruction in geography altho there may not be ready agreement as to the appropriate type of course in geography.[4] Physical geography clearly does not meet the need, since it was designed at the University as an introductory course for geography majors, and hence is too restricted. It gained its present prominence largely by reason of the credit system. Several junior college instructors express dissatisfaction with this course for their purposes, particularly where the model of the University is followed, and are experimenting with new outlines. The sequence in Economic Geography comes closer to what might be desirable, but it is not ideal, possibly because of the customary topical treatment. The same might be true of cultural geography, altho here one cannot generalize, since the course with this title at Berkeley (where it might be subtitled "Culture History") differs significantly from the one with the same name at Los Angeles (where it

[3] Personal communication from Dr. Herman A. Spindt, Director of Admissions, University of California, Berkeley.

[4] This problem is discussed by Meyer Weinberg, "Geography and General Education: A Junior College View." *Junior College Journal*, Vol. 21 (February 1951), p. 341. His suggested outline will be thought by many to be quite unbalanced toward political geography.

combines culture history and regional geography). This difference is reflected in the catalogue numbers given to these courses, and applies to the junior colleges following the universities.

Perhaps the best type of geography course to be offered for terminal students would be a World Regional Geography, possibly with some emphasis on economic topics. Only four junior colleges, the same number as seven years ago, offer a course with such a title. Lack of interest on the part of the students is certainly not the reason for the absence of improvement in this direction. One might suggest several causes for this shortcoming: one could be that administrators and teachers in junior colleges put too much weight on the transfer credit-value of their courses; another might be a past unawareness of this problem in some of the departments of geography in the universities; a third is the fact that teacher training lies not in the academic departments but in the departments of education, which have little interest in, or grasp of the problems of content.

Yet another reason may lie in the varied backgrounds of the instructors teaching geography in the junior colleges as is shown in Table 3. Of 54 instructors teaching geography courses in the 37 institutions considered, 14 have advanced degrees in geography, three have Bachelor's degrees with a major in geography, and five have studied geography as a minor field. Other instructors have specialized in fields as remote from geography as Aeronautics,

TABLE 3

HIGHEST DEGREE, MAJOR AND MINOR FIELD OF GEOGRAPHY INSTRUCTORS

Major field	Highest degree			Total	Minor field
	Ph.D.	M.A.	B.A.		
Geography	3	11	3	17	5
Geology	—	5	3	8	2
History	—	5	—	5	3
Economics	—	5	—	5	3
Business Admin. & Education	—	4	1	5	1
Political Science	—	3	—	3	1
Social Studies	—	1	1	2	5
Biology	1	1	—	2	—
Education	—	2	—	2	—
Sociology	—	1	—	1	—
Psychology	1	—	—	1	1
English	—	1	—	1	3
Aeronautics	—	1	—	1	—
Mining Engineering	—	1	—	1	1
Others	—	—	—	—	7
	5	41	8	54	32

English, or Psychology. Some—one indicated as much on the questionnaire—may never have had a formal course in geography during their training.

Of those holding advanced degrees in geography, six Master's degrees originate at the University of California, Los Angeles, and two Master's degrees at the University of California, Berkeley. The remaining advanced degrees were conferred by universities outside of California. It is remarkable that no California state colleges are represented. One may reflect upon this distribution. The usual answer that remuneration is too low does not hold true since California junior colleges pay relatively high salaries. Also one cannot say that graduate students are not aware of the employment possibilities. The reason for the low attractive power of the junior colleges must lay elsewhere. An attitude generally encountered among graduate students in the two universities is this: they are trained, they hold, in geography departments counting among the best in the country, therefore they are qualified for jobs at higher levels. This attitude is found particularly among those working toward the Ph.D. degree and may conversely account for the reluctance on the part of the junior colleges to consider graduates in this category. But a persistent, and more serious complaint is directed toward the education courses required to qualify for junior college teaching credentials. This attitude, which considers education courses a complete waste of time, is not generated by the faculty but originates from those students who have subjected themselves to such courses. As long as these attitudes prevail the junior colleges will not be able to secure for themselves instructors of the highest caliber. Since geographers generally are not "narrow specialists" but need a wide and varied background, they would be valuable additions to junior college faculties.

Carthew, in an attempt to get an impression of the quality of instruction, inquired not only into the formal qualifications of instructors, but also into the physical equipment available at the various junior colleges. The present survey sought to achieve this by determining what geographic periodicals are available in the libraries of junior colleges, and by asking about the professional affiliations of the geography instructors. Six libraries subscribe to one periodical[5] each, 15 to two or more. Of these 15, nine are at colleges where a faculty member holds a degree in geography.

[5] The *National Geographic Magazine*, a popular magazine, is not considered in this group.

Twenty-one instructors are members of one or more professional geographical societies, 15 of them hold degrees in geography (including the Bachelor's degree with a major in geography).

Gratifying advances can be noted in the teaching of geography in California junior colleges with respect to increased enrollment and the increase in the number of junior colleges offering geography courses since 1948. But Carthew's conclusion of seven years ago, that "the most obvious weakness is the lack of sufficient instructors adequately trained in the subject" still holds true. His contention that geography flourishes where well qualified specialists are teaching is borne out by the fact that nearly two thirds (3,330) of the total enrollment in geography (5,520) is in the twelve colleges where teachers holding degrees in geography are teaching geography courses.

There seems to be increasing recognition that geography has a definite place in the "general education" program, but little thought appears to have been given to the type of courses best suited to the purposes of the junior college. Co-operation between the junior colleges and the university departments of geography would indeed benefit the junior colleges, probably also many graduate students, and ultimately, of course, the junior college students in the form of good instruction.

GEOGRAPHY IN RELATION TO CONSERVATION

Ernest E. Melvin
Planning Department, City of Evanston, Evanston, Illinois

It has become apparent that, with the advancement of technology and the growing interdependence of the peoples of the world upon each other, more attention must be paid to the utilization of the world's resources. The more attentive attitude being directed to the world's productivity has come about from increased population pressure on the land. Productivity has created needs in terms of raw materials in three ways: kinds of raw materials, quantity of raw materials, and quality of raw materials.

Philosophic Considerations

The growth of business, working and professional classes which accompanied the Industrial Revolution caused a general rise

in the standard of wants within predominantly industrial nations. Furthermore, these middle classes gained a voice in determining policies dealing with the economic welfare of the state. This eventually led to the partial regulation of the use of raw materials for the general welfare as compared to the earlier use of these resources to satisfy the very specific needs of a very limited consumer market consisting of the nobility and wealthy entrepreneurs. As the market grew, the demand for greater quantities and more varieties of raw materials evolved. This meant that there was created a need to simultaneously insure the future security of these resources, particularly those in limited reserve, and to derive the maximum benefit from their use. As a result, there was developed a philosophy concerned with the regulated use of natural resources.

One name which has been applied to this philosophy is *conservation*. For the purpose of this paper, conservation may be defined as the use of natural resources in the most judicious manner in order that each member of society may derive maximum benefits. There is implied herein the necessity for planning in order that this ultimate objective may be obtained. Geography is often defined as the analysis of significant differences as they vary from place to place and the study of regional functions. Wherein does the identity of conservation and geography approach coincidence? It is the analysis of items pertinent to the problems of conservation and the study of the interaction of these items in relation to areal and cultural differences which are essentially the scope of interest of conservationally-minded geographers.

In both theory and practice, there are significant contributions which the field of geography can make to conservation. In theory, these are essentially (1) areal differentiation in terms of environmental conditions, (2) areal differentiation in terms of cultural phenomena, and (3) the study of interrelationships of environmental and cultural conditions as they function in specific regions.

Areal Differentiation of Environmental Conditions

Areal differentiation in terms of environmental conditions simply means that the conservationist must consider differences in slope, rainfall, climate, vegetation cover, forms of precipitation, etc. Thus, when the soils expert looks for the causes of soil erosion or wishes to remedy the situation, he must take into consideration

these factors and apply the appropriate techniques. The farm planner, the rural practitioner of conservation, must consider differences of slope, soils, and drainage patterns before he can recommend that specific types of land utilization be put into effect or that more drastic changes be made to the extent of almost completely reorienting individual farm economies. In the conservation of manufacturing or commercial operations, the business man and transportation expert must take into account conditions of the natural environment. Heavy-duty motor roads and railroads usually follow routes offering the least differences in elevation and mileage. The processer and distributor of certain perishable goods find it necessary to know details of climatic conditions to protect their wares from adverse weather conditions. One of the most outstanding examples of the effect of the natural environment on industry is the ice-bound period of the Great Lakes which permits only seasonal use of that vital industrial route. It can thus be seen that whether conservation is applied in the field of agriculture or industry, certain elements of the natural environment must generally be taken into account. It is the business of the geographer, therefore, to differentiate areally in terms of the natural environment and to indicate these differences in a manner which can be used by others as well as by academic geographers.

It is a moot point as to whether natural or cultural environment is more important, but it is recognized that while the former imposes certain limits on human activity, the latter influences the significance of diverse elements of the former. Not only do various features of a culture group limit human activity, but they also give it direction and govern the manner in which human activities are carried on. Thus, there is a distinct necessity to analyze areas in terms of primary needs and also how needs can be met in the most efficient manner compatible with the ways of the people concerned. The conduct and planning of conservation measures must consider the attitudes, customs and mores of the people concerned in order to be meaningful to them.

Elements within culture groups often change radically in a relatively short period of time. There may be changes in institutional life, advances or retrogression in technology, and variations in the basic psychology of the people. In the process of cultural and technological development, various features of the physical environment take on importance. It was not until tilling could be

accomplished that many of the swampy but fertile plains areas of Iowa and Illinois came to be important in the agricultural economy of the Middle West. It was the complete political and socio-economic reorientation of Japan that caused it to make a different use of the ocean which surrounded the islands and to learn the technology of industrial society. Thus, in the field of human ecology, items other than those of the physical environment must be considered.

AN ENVIRONMENTAL BALANCE

The constant interaction of factors of the physical environment has been said to be continually working as a balance in which the over-exercise of one factor will upset it, thus causing such calamities as flood, fire, and famine. Man, himself, in his disregard for the laws of nature, has at times become as effective as any factor of the physical environment per se. It has been in this manner that soil erosion has been induced thru the baring of soils to wind and water. Witness the apparently regenerating Dust Bowl and the loess plains of China! One may also look at the abandoned lands of the Middle East where once rich agricultural production thrived, but now desert prevails. From a broader point of view, we must consider the effects of the so-called natural calamity upon human activity.

WHAT THE GEOGRAPHER CAN DO

It is not the task of the geographer to study merely the distribution of the various factors of the physical and cultural realms. In short, the geographer, in order to give meaning to accumulated fact, must seek out correlations and causal relationships between these phenomena. The geographer must borrow, if necessary, from other disciplines in order to understand the over-all picture. To effectively practice conservation, plan regionally, or manage resources, man must be understood within the framework of his total existence. Thus, the geographer and conservationist must have a thoro understanding of the functions of the balance of nature and human ecology.

THE PROBLEM SOLVING FUNCTION

Of what utility is theory alone? Does the geographer have a place in conservation practice? The answer is, of course, affirma-

tive. He has a five-fold contribution to make to the methodology of problem solving involved in conservation techniques. These are problem definition, survey, analysis, synthesis and administration. In each of these methods, the geographer makes use of one of his most important tools—the map. In this way, he is enabled to answer many questions which demand knowledge of the location of natural resources and pertinent items, the plotting and analysis of data, and the presentation of a formulated plan.

Definition and Survey

One of the first requisites in the solution of any problem is to find out the factors involved and the basic information concerning these factors. So it is with the conservation practitioner who must know or discover all pertinent items in the area with which he is concerned. These include soils, climate, relief, slope, population factors, types of livelihoods practiced, traditions of the communities involved, and a host of other factors. It is here that the geographer must use his ability to differentiate areally in terms of both the physical environment and the cultural groups concerned. The essential task of the conservationist, or regional planner, is to determine which areas do not appear to be responding as effective economic units. In order to find out possible causes of socio-economic malfunction, the geographer is well equipped to sort out and map information which might give a clue to the solution of the problems.

Analysis

After having gained the necessary information, these data must be analyzed and interpreted to determine the distribution and occurrence of items which may have a direct bearing on the problem. In regional planning projects carried on by the United States Department of Agriculture, it has been found necessary to plot on maps all kinds of information and to analyze these maps for possible sources of trouble. Where an agricultural community appears to be blighted, it has been found that there are certain correlations (not necessarily causally related) which may often occur. Thus, in a blighted community in a farming region, there is quite likely to be correspondences between slope, erosion, soil types and production. By the use of maps and the careful analysis of data, factors which contribute to various aspects of the prob-

lem at hand can be determined. Complete analysis must precede attempted solution to these problems. Because the geographer is trained to recognize spatial relationships and elements of the regional structure, he is especially equipped to analyze both positive and negative coincidences which may have a bearing on the economic condition of a region. Thus, having carefully surveyed and analyzed factors involved in problems of conservation, often with the help of personnel and skills of other disciplines, the problem of planning for the most efficient use of natural resources is at the point of synthesis.

SYNTHESIS

Here again, the geographer has an important role to play in solving conservational problems. Whereas people concerned with other disciplines are occupied mainly with the orientation of facts in terms of certain types of processes and/or services, the geographer by definition should be able to see the workings of the contributions of other professions and disciplines in the perspective of the plan for the region as a whole. In the Tennessee Valley Authority, geologists, soils experts, engineers, foresters, industrial management experts, and a host of other people worked with geographers to bring about a usable plan of action. While these various disciplines had vital contributions to make, they were specific. Frequently, non-geographers cannot see beyond the determinism of their respective disciplines. It was the geographer with his over-all point of view who was more able to consider and evaluate the importance and relationship of various aspects, one to the other, in terms of the framework of the whole plan. This concept was still further pointed up by an economist working with the Missouri Valley Authority in 1950. He believed that the geographer was particularly suited for the recognition and evaluation of economic and social effects of the MVA upon the Missouri Basin and the Nation. He also believed that it was within the realm of the geographer to conduct preliminary study of possible industrial and commercial developments utilizing all resources of the Basin. In synthesizing the problem, the geographer is thus primarily concerned, aside from his special contributions, with the orientation of factual information in terms of that particular situation.

Administration

The contributions of the geographer do not stop with the planning stage (synthesis) in the sense of a particular time period. Because of his ability to view with an over-all perspective, he is also well equipped to note trends and to consider these in terms of the previously established plan. The geographer can perhaps even incorporate them into the long range plan. A conservational approach which is non-historic is static and non-functioning. The case in point is that of over-planning in the Chicago metropolitan area in which over-zoning resulted from the lack of the consideration of possible technological and economic changes with the times. These outmoded zoning ordinances remained in effect long after the trends became apparent but are now being overhauled.

Conclusion

It is the belief of the author that conservation is an integral part of modern industrial societal functions. This results primarily from the interdependence and interrelationships of man to various aspects of his culture, the natural environment, and raw materials. In order to adequately practice conservation as defined, one must consider differences from place to place in these terms. This, by very definition, is the field of geography. It has been pointed out in this paper also that the geographer has a definite contribution in theory and in practice for the solution of conservation problems. Here, then, is a challenge to geographers to be of service to society in applied geography as well as in academic endeavors. Instead of apologizing for the things geographers do trying to justify the existence of the discipline, members of the profession can make it known for the work that it does.

THE NATIONAL COUNCIL AT WORK

Project Committees of the NCGT. The work of four of the active project committees of the NCGT will be featured in the annual program at the Claridge Hotel in Atlantic City on November 23-24.

Under the chairmanship of Sigismond deR. Diettrich, the *Committee on Resource-Use Education* has planned one session of the program. This session includes discussions of aspects of resource-use education and reports on the committee's activities. Members of the committee are Sigismond deR. Diettrich (chairman), Thomas W. Chamberlin, Sam Clagg, J. Sullivan Gibson, Thelma Flavin, Nicholas Helbron, Ella Keene, Ruben L. Parson, George T. Renner, III, and Francis Schadegg. Each committee member represents a region of the United States.

Three other project committees have scheduled Open Committee Meetings for the annual program. These meetings will include informal discussions, in which all persons interested in the work of the committees will have opportunity to become acquainted with the committee activities and problems, and help give guidance to the committee efforts. Your attendance is warmly invited at the Open Committee Meetings of the following project Committees:

Committee on Survey of Research in Geographic Education: Paul Griffin (Chairman), Martha Corry, R. S. Funderburk, Hildegard Binder Johnson, Lorrin Kennamer.

Committee on Television: Jewell Phelps (Chairman), Robert E. Cramer, Mildred Danklefson, Kenneth P. Haydon, Leonard I. Kuntz, Robert Redden, Alfred Sumner, John H. Walker, and Henry J. Warman.

Committee on Tests: Berenice Casper (Chairman), F. Douglas Hammond, Frank E. Sorenson, Ruth H. Stanley, and Adelle Zigrang.

Two additional active project committees have work in progress. These are the *Index Committee,* preparing an index of the JOURNAL OF GEOGRAPHY under the chairmanship of John W. Morris, and the *Committee on Bibliography of Reading Materials,* which is completing its report. Membership of the latter committee: Helen Mixter (Chairman), Emily H. Baker (Sub-Chairman), Zita Anne Mueller (Sub-Chairman) Adelaide Blouch, Harriet Lee and Anna Moengen.

The Resolutions Committee welcomes your suggestions. Do you have suggestions relative to educational policy to propose to the NCGT Resolutions Committee of 1956? That committee is Loyal Durand (Chairman), Emily H. Baker, George W. Hoffman, and Alan P. Mewha. Your recommendations should be addressed to Dr. Loyal Durand, University of Tennessee, Knoxville, Tennessee.

Plan to attend the annual meeting. Dr. Benjamin Cohen, Under-Secretary of the United Nations for Trusteeship, will deliver the banquet address at the NCGT annual meeting on Friday evening, November 23. He will speak on "United Nations Geopolitical Concepts." Dr. Cohen is a strong and enthusiastic advocate of improved geographic education, believing that it must be strengthened to play a more decisive part in the creation of the realistic spirit of world-mindedness required to approach the complexities of international relations.

A full outline of the annual program appears in the September issue of the JOURNAL OF GEOGRAPHY. Plan to attend this meeting and participate in the discussions.

Place: Claridge Hotel, Atlantic City, New Jersey

Time: November 23-24, 1956

NORMAN CARLS
President

GEOGRAPHICAL PUBLICATIONS

John H. Garland, ed. **The North American Midwest—A Regional Geography.** John Wiley and Sons, Inc., New York, 1955. viii and 252 pages with illustrations, maps, tables, bibliography and index. $6.75.

This is the second in a series of text books designed to provide coverage of the United States by regions. As such, it is to be welcomed for it brings together a wealth of material on one of the world's outstanding areas of production, an area that is recognized not only by its unique combination of natural advantages but also by its similarly unique material culture.

The book is divided into two parts. The first deals with selected elements—weather and climate, settlement, agriculture, industry and transportation—and can be read with profit and delight by anyone interested in North America. Some of the material is new and particularly worthwhile, such as that in the chapter on trade and transportation. Unfortunately, there is no separate treatment of the historical background of midwestern development. Historical references do creep in, as in the first two pages of the chapter on settlement, but these hardly seem sufficient.

The second part of the book (approximately two-thirds of it) is regional geography. The Midwest is divided into ten regions, four in the inner Midwest and six on the periphery. In most cases these are further subdivided into a number (anywhere from two to nine) of subregions, districts or sections. The result is a collection of useful material, but by its very nature, it is difficult to read with any sustained interest. Moreover, there is no uniformity of treatment in the major regions. In some, only subregions are discussed. In others, there is the standard listing of natural features, settlement, agriculture and industry. In still others, population and occupance patterns are stressed. Some of the chapters have summaries; some have a concluding section dealing with problems; others have neither. All this makes comparison between different parts of the Midwest difficult. This limitation aside, however, there is much here of value to all who teach and study the geography of North America.

R. LOUIS GENTILCORE

Los Angeles State College

Leonard O. Packard, Bruce Overton, and Ben D. Wood. **Geography of the World,** 3rd Ed. The Macmillan Co., New York, 1956. viii and 498 and xiv pages with photographs, maps, tables and index. $4.72.

This new textbook, *Geography of the World,* is designed for junior and senior high school classes. However, it is more suitable for senior high school students because of the advanced vocabularly. The book is well organized and contains 498 pages plus a very complete index. There are sufficient, meaningful maps, pictures, and graphs to be helpful to the geography student.

The maps are located in a separate section. Putting most of the maps together in one place in this way makes for ready reference. The maps do not contain too much confusing detail but are generally simple and usable.

The pictures are unusually good. For the most part, they are black and white and show the relationship of man to his natural environment.

The sequence of units follows the principle of adjacency in building a world pattern. For example, after the Low Countries of Europe, France, Switzerland, and Italy are studied.

There is a very well-organized statistical appendix, which should be of value to both student and teacher.

These tools of geographic education should be used as a springboard to further

research in widening the pupils' horizons and broadening their interests in geographic understandings.

KATHERINE MONTGOMERY

Greensburg Junior-Senior High School
Greensburg, Pennsylvania

P. H. Kuenen. **Realms of Water.** John Wiley and Sons, Inc., New York, 1955. 327 pages with illustrations, bibliography and index. $6.50.

The study of world resources is one in which all geography teachers are interested and a good deal of material is available about the way in which resources are obtained and used. However, there is a scarcity of studies which treat in detail the nature of a particular resource. This book, by Professor Kuenen of the Department of Geology at the University of Groningen in the Netherlands, is such a study and will be welcomed by all teachers of resource material, especially in high schools and colleges. It is not a textbook but contains a wealth of information which can be used to supplement and enrich the standard items usually considered under the topic of water resources.

The treatment is extensive and touches upon many fields, including meteorology, oceanography, geomorphology and biology, considering from these fields certain aspects that pertain to water. The material is organized on the basis of the cycle of water in nature and in each subdivision, the behavior of water is described and related to changing forms on, under and over the surface of the earth. The subdivisions considered are: Water in the Oceans, Water in the Atmosphere, Water in the Solid State, Water in the Ground and Water on the Surface. The first of these is the longest (approximately one-quarter of the book) and ranges from deep sea soundings and the configuration of the ocean floor to ocean circulation and the work of waves and currents. The other chapters are similarly extensive and each is studded with bits of information that cannot help but prove interesting. For example, one chapter contains a section in which the great waterfalls of the earth are compared; another has a six-page account of avalanches; in still another, the calculated damming of the Zuider Zee is described. The whole book is written in a style that is enjoyable to read and is profusely illustrated with full-page photographs, sketch maps, drawings, cross sections and block diagrams.

R. LOUIS GENTILCORE

Los Angeles State College

George Kish, ed. **An Introduction to World Geography.** Prentice-Hall, Inc., 1956. xiii and 600 pages with illustrations, maps, bibliography, and index. $7.95.

The goal of providing explanations of man's responses to his environment, as stated in the first two paragraphs of the preface, continually influences the selection of information in the forty-two chapters of the text. For each region, discussions gave the explanations of the formation of the land, the soil development, and the climate influenced by its controlling factors. In addition, concise statements answer many questions which are frequently asked regarding different national units and people's arrangements. The background of some usual erroneous ideas is recognized and correct information is included which should reduce the acceptance of the incorrect. Basic understanding for world citizenship influenced the frequent presentation of potential resources in each region.

The text is realistic thruout and weaves different types of geography—urban, military, economic, social, and historical—into the discussion of the different political units and regional areas. The authors intentionally included such debatable topics as the benefits and hindrances to colonies controlled by Caucasian nations. Both potential resources and persistent problems of each region are presented. That every part of the

world desires the benefits from scientific investigations is made evident by the illustrations in each chapter.

A well-balanced division of the text was allotted for the discussion of each of the nine regional areas: Anglo-America; Latin America; Europe; Soviet Realm; Monsoon Asia; the Near East; Africa; Australia, New Zealand, and the Islands of the Pacific; and the Polar Lands. The writers for three of the nine divisions reside in the Eastern World. A geographer in South Africa wrote the division on Africa; an Australian wrote regarding Australasia; and a Scot, the Polar Lands.

The format, the glossary, and the maps drawn for the text are commendable. For somewhat unfamiliar terms, part of the chapters have abbreviated definitions in parentheses in the sentences having those terms. Other chapters, using technical and scientific terms which are beyond the reading ability of typical American college students, need these helpful abbreviated definitions. A Virginia resident regrets the word-choice of Piedmont Plateau, fall-line, and ground nuts.

This well-balanced text will undoubtedly be welcomed by teachers who believe in presenting both advantages and disadvantages found in each part of the world. The use of explanations in this book goes far beyond narrative and descriptive geography.

RAUS M. HANSON

Madison College
Harrisonburg, Virginia

Raus M. Hanson. **Virginians at Work.** Twayne Publishers, Inc., New York, 1956. 427 pages with maps, tables, illustrations, glossary and index. $4.00.

This book is one of the first written about the Old Dominion that analyzes and interrelates its physical and cultural elements. It is unique as a study for Virginia because it discusses the people and their activities from a physical base, the natural environment. The book points out the advantages or disadvantages played by the physical environment on occupational undertakings and their arrangements.

The first chapter, entitled "Seeing Virginia," reveals how visitors from other states will each see Virginia and interpret the landscapes according to their individual interests. This chapter is written to develop an awareness of the varied physical and cultural patterns and the specific problems that are related to them. Chapters two thru sixteen deal with elements of the natural environment. These elements are sunlight, air masses, winds, seasons, climates, soils, and landforms or physical regions.

More than twenty chapters are devoted to man's economic activities. Nine chapters are devoted to Virginia's leading agricultural products. Four chapters discuss the rocks and minerals of economic importance. The remaining chapters deal with fishing, transportation, harbors, industries and manufacturing, urban population, and scenic and historical attractions in Virginia.

Near the back of the book is a suggested outline for those who want to teach the geography of their home community. Helpful suggestions are given as to where materials may be obtained. The appendix is devoted to methods of using degrees of latitude and longitude for a better understanding of place location. At the end of the book is an excellent glossary of geographic and scientific terms.

The book is well illustrated with seventy maps, charts, and photographs. It is one of the best available for the study of Virginia. The organization is logical and well balanced; the text is concisely presented and is outstandingly readable. The physical, cultural, and economic aspects are adequately considered.

CHARLES F. LANE

Longwood College
Farmville, Virginia

Alfred J. Wright. **United States and Canada,** 2nd Ed. Appleton-Century-Crofts-Inc., New York, 1956. xviii and 590 pages with maps, tables, photographs, bibliography and index. $7.00.

Mr. Wright has attempted the stupendous task of covering the geography of the United States, Canada, Alaska, and the Hawaiian Islands in 590 pages. In this attempt he has been partly successful and partly unsuccessful. In the eyes of this reviewer the book possesses several shortcomings and considerable merit.

The most significant shortcoming of the book is the rather skimpy bibliography. The physical landscape, i.e., physical geography of practically every area is inadequately treated. The regional boundaries seem to be rather arbitrarily drawn. (Apparently the author himself is aware of this shortcoming judging from a quotation taken from the preface. "In the development of both countries a regionalism related to the physical conditions of the landscape persists, but the works of man tend increasingly to blur the delineation of these traditional regions.") The amount of space devoted to Canada, Alaska, and Hawaii is pitifully small. It appears not inappropriate that the sections on Alaska and Hawaii might have been omitted and the Canadian portion considerably expanded. The majority of the maps, while clearly drawn, do not convey much information to the reader.

On the other hand, the author is to be complimented on a succinct style, which enables him to convey a maximum of information in minimum space. Photographs are well chosen and carefully reproduced. Statistical data are as up-to-date as practical. Essentially all such statistical information is for 1950 or later, much of it for 1954, and in a few cases 1955 figures are utilized.

United States and Canada is a book which should be on the shelf of every student of North America. It provides an essential skeletal framework upon which professor and student can build.

Arthur H. Dozer

University of Oklahoma

Josephine Budd Vaughan. **The Land and People of the Philippines.** J. B. Lippincott Co., Philadelphia, 1956. 118 pages with photographs, one map and index. $2.75.

This is one of the twenty-odd volumes in the publishers Portraits of the Nations Series. Planned for readers aged 12-16, it is interestingly written and touches a number of disciplines, i.e., geography, history, sociology, economics, government, even a bit of geology.

This small book leaves the reviewer with somewhat mixed emotions. He is pleased with the easy, journalistic style and with the number and variety of facts that have been woven into the twenty-two short chapters. The sixteen full-page photographs are excellent. Yet, when the reading is complete, there is a strong feeling that far too many factual errors, and misconceptions, are present. The author, possibly unwittingly or unknowingly, has oftentimes overemphasized the primitive or semiprimitive life at the expense of the modern plantation or factory; has described in detail the unusual and slighted the day-to-day routine of the majority of the population.

If the book were to be given a critical editing by someone thoroly familiar with Philippine life and customs, it would be a most valuable addition to any Junior High Library. As it is now printed, its value is markedly reduced.

Alden Cutshall

University of Illinois, Chicago

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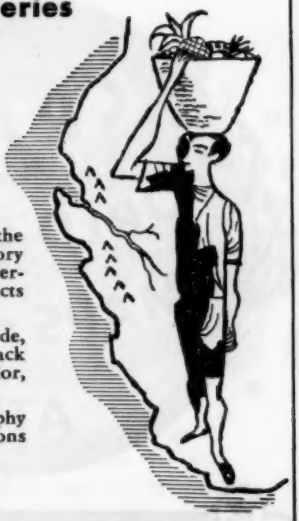

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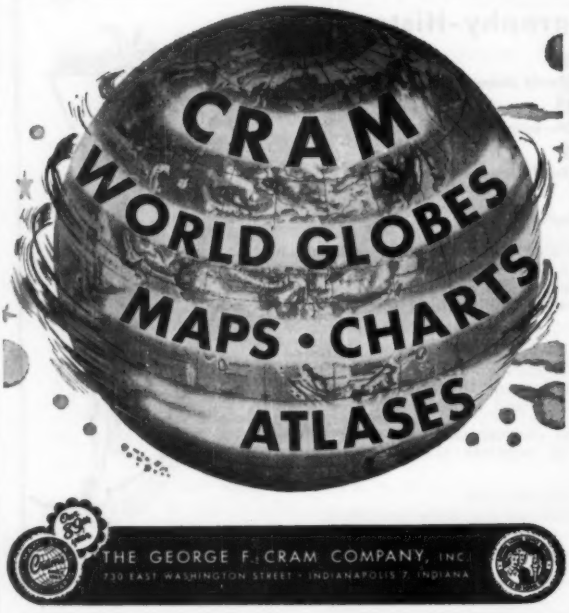
EDITORIAL NOTES AND NEWS

Are you interested in Mexican dolls? The Oolie Hunter School, Avenida Colon 51, Coatzacoalcos, Veracruz, Mexico, is preparing and selling dolls to raise funds for the purchase of educational equipment. The dolls are dressed to represent various states of Mexico as well as several dolls representing typical Mexican characters. If you are interested, write directly to the above address.

Have you seen the Annual Report of the Federal Reserve Bank of Chicago (1955). This report has an excellent article on the growth and prosperity in five midwest cities. Also, the Monthly Review for March, 1956 of the Federal Reserve Bank of St. Louis discusses in considerable detail the ground water resources of the eighth district, served by the bank.

The United Nations *Demographic Yearbook* gives a vast amount of information on the population of the world, which is now estimated to be approximately 2,652 million. About 55 per cent of the world's population is in Asia (excluding the USSR), 404 million in Europe, 357 million in the Americas, 214 million in the USSR, 210 million in Africa, and 14.4 million in Oceania. The most populated countries are Chinese mainland with 583 million; India, 377 million; USSR, 214 million; United States, 162 million; Japan, 88 million; Indonesia, 81 million; and Pakistan, 80 million. Among the "metropolitan areas" the five largest are New York (12,300,000), London (8,300,000), Tokyo (6,300,000), Shanghai (6,200,000), and Paris (4,800,000). Among the self-governing countries, India with 82.1 per cent illiteracy and Haiti with 89.4 per cent are the countries where this problem is most acute.

The Americas supply 80 per cent of the world export of bananas, more than 22 per cent of the America's exports being supplied by Ecuador. Other leading exporters are Costa Rica and Honduras. The United States takes about half of all the world exports.



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GEOGRAPHICAL PUBLICATIONS

Verne E. Davison. **Managing Farm Fishponds for Bass and Bluegills.** Farmers' Bulletin No. 2094, U.S. Government Printing Office, Washington 25, D.C., 1955. 18 pages with illustrations. 15 cents.

This bulletin supersedes Farmers' Bulletin 1983, *Farm Fishponds for Food and Good Land Use*, and is put out by the U. S. Department of Agriculture.

U. S. Bureau of Census. **Census Atlas Maps of Latin America—Central America.** U. S. Department of Commerce, Washington 25, D.C. 9 maps. $1.00.

This portfolio includes general maps on Land Forms, Climatic, Natural Vegetation and Roads and Railroads and urban and rural population maps on Guatamala—British Honduras, Honduras and El Salvador, Nicaragua, Costa Rica and Panama.

Oxford Home Atlas of the World. Oxford University Press, New York, 1955. 104 and xxxi pages with maps and gazetteer of the British Isles and of the world. $2.40.

The Cartographic Department has devised for this atlas a new technique—"hill shading"—that gives the maps a moulded, three-dimensional effect.

David Hannerberg. **Die Älteren Skandinavischen Ackermasse.** C. W. K. Gleerup Publishers, Lund, Sweden, 1955. 45 pages with illustrations and bibliography. 5: —. Sw. Kr.

One of the Lund Studies in Geography by The Royal University of Lund, Ser. B. Human Geography No. 14.

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United States Atomic Energy Commission. **Major Activities in the Atomic Energy Programs,** July-December, 1955. U. S. Government Printing Office, Washington 25, D.C., 1956. xi and 200 pages with illustrations. 60 cents.

This report includes membership of committees, patents, research and the 1955 financial report.

Educators Guide to Free Tapes, Scripts and Transcriptions, Second Annual Edition, 1956. Educators Progress Service, Randolph, Wisconsin, 1956. 161 pages. $5.75.

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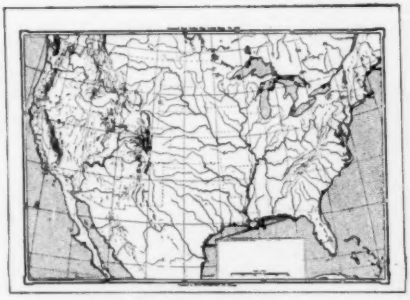

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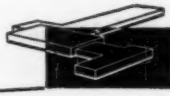

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